

display 10. The leg 30 extends rearward and is thus supported on the horizontal surface on which the display apparatus 1 is installed.

[0061] Accordingly, the display apparatus 1 is supported at three points on the horizontal surface by the both ends of the lower end of the support frame 20 and the leg 30, and therefore the display apparatus 1 may remain standing on the horizontal surface when installed. At this time, the display 10 and the support frame 20 may be installed at an incline through the leg 30 such that the upper ends thereof are inclined rearward to prevent the display 10 from falling down on the front surface thereof.

[0062] Referring to FIGS. 7 and 8, the display 10 includes a display panel 110 to display images, a bottom chassis 120 to support the rear surface of the display panel 110, and a top chassis 130 to cover the outer edges of the front surface of the display panel 110.

[0063] The display 10 further includes a side surface case 160 to define upper, lower, left and right sides of display 10 to cover the side surfaces of the display panel 110 and bottom chassis 120 and a rear surface case 180 coupled to the rear side of the bottom chassis 120 to define the rear surface of the display 10 and cover the rear surface of the bottom chassis 120 and the printed circuit boards 150, which will be described later. The external appearance is formed by the side surface case 160 and the rear surface case 180.

[0064] The display panel 110 is provided with an organic light emitting diode panel (not shown). Since the organic light emitting diode panel is formed in the shape of a flexible film, it may be easily bent.

[0065] The bottom chassis 120 is formed of a metallic plate and formed on the rear surface of the display 10. A reinforcement member 140 to enhance strength of the bottom chassis 120 is installed on the front surface of the bottom chassis 120, and the various printed circuit boards 150 to control operation of the display apparatus 1 are installed on the rear surface of the bottom chassis 120.

[0066] The reinforcement member 140 is provided with a honeycomb panel having a honeycomb structure formed therein in order to secure light weight and sufficient strength.

[0067] The top chassis 130 is formed in the shape of a quadrangular ring to support the outer edges of the front surface of the display panel 110 such that the display panel 110 is held installed in the bottom chassis 120.

[0068] Herein, the bottom chassis 120, top chassis 130 and reinforcement member 140, as described above, are formed in a curved shape, and the display panel 110 is formed in the shape of a flexible film to be easily bent is attached to the inner surface of the reinforcement member 140. Accordingly, in response to the display panel 110 being attached to the reinforcement member 140 formed in a curved shape, it may be bent to have a shape which corresponds to the shapes of the bottom chassis 120 and the reinforcement member 140. That is, the display panel 110 is curved such that both lateral ends thereof protrude forward to correspond to the bottom chassis 120 and the reinforcement member 140.

[0069] In addition, disposed between the reinforcement member 140 and the display panel 110 are a heat dissipation sheet 141 formed of a material having a high thermal transmittance to allow heat produced in the display panel 110 to be distributed and dissipated within a short period of time, and an insulation sheet 142 formed of a thermally insulative material and disposed between the heat dissipa-

tion sheet 141 and the bottom chassis 120 to prevent rearward transfer of heat produced in the display panel 110. In this embodiment, the heat dissipation sheet 141 is provided with a graphite sheet, and the insulation sheet 142 is provided with a poron® sheet.

[0070] The bottom chassis 120 and the reinforcement member 140 are formed in a curved shape such that both lateral ends thereof protrude forward, and the display panel 110 is formed in the shape of a flat panel. In response to the display panel 110 being supported by the bottom chassis 120 and the reinforcement member 140, the display panel 110 is deformed in a curved shape such that both lateral ends thereof protrude forward to correspond to the bottom chassis 120 and the reinforcement member 140.

[0071] The printed circuit boards 150 are flat panel-shaped substrates with various electric components mounted thereon. The printed circuit boards 150 include a power board 151 connected to an external power source to allow power to be supplied to the display apparatus 1, a panel drive board 152 to transfer the power to the display panel 110 to drive the display panel 110, a timing control board 153 to transfer an image signal to the display panel 110, and a signal processing board 154 to process various signals, such as an image signal and a sound signal.

[0072] The power board 151 is divided into two parts and disposed at both sides of the central portion of the bottom chassis 120. This allows power board 151 to correspond to the bottom chassis 120 formed in the shape of a curved surface. Thereby, the distance between the power board 151 and the rear surface of the bottom chassis 120 may be maintained to be equal to or shorter than a certain distance.

[0073] The panel drive board 152 is disposed at the center of the upper portion of the bottom chassis 120. The timing control board 153 is disposed at one side of the lower portion of the bottom chassis 120, and the signal processing board 154 is disposed at the other side of the lower portion of the bottom chassis 120.

[0074] In this embodiment, insulation sheets 155 and 156 are disposed at positions on the rear surface of the bottom chassis 120 corresponding to the power board 151 and panel drive board 152. Thereby, they may prevent electrical interference between the power board 151 and panel drive board 152 and the bottom chassis 120.

[0075] A sub-speaker 190 such as a woofer speaker is disposed at one side of the rear surface of the bottom chassis 120. In this exemplary embodiment, the sub-speaker 190 is formed in a L shape and has a thickness which gradually decreases as the sub-speaker 190 extends from the central portion of the bottom chassis 120 toward a lateral end of the bottom chassis 120, such that a portion of the sub-speaker 190 positioned closer to the central of the bottom chassis 120 is thicker than another portion of the sub-speaker 190 positioned closer to the lateral end of the bottom chassis 120.

[0076] Referring to FIG. 9, the bottom chassis 120 is provided with studs 121 which allow the printed circuit boards 150 to be installed and spaced apart from the rear surface of the bottom chassis 120.

[0077] The studs 121 integrally protrude rearward from the bottom chassis 120. The printed circuit boards 150 are fixed to the tips of the studs 121 protruding rearward through, for example, screws such that the printed circuit boards 150 remain spaced apart from the rear surface of the bottom chassis 120 when fixed to the bottom chassis 120.